

Global Veterinary Summit

August 31- September 02, 2015 Orlando-FL, USA

Comparative study of morphological changes in the proximal third of the suspensory ligament of the pelvic limbs with and without neurectomy of the deep branch of the lateral plantar nerve

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Proximal suspensory desmitis (PSD) of the pelvic limbs is a common cause of lameness in the horse and neurectomy of the deep branch of the lateral plantar nerve (DBLPN) has become a commonly performed procedure for treatment of horses for PSD. The cross-sectional area of the proximal aspect of the suspensory ligament (SL) has been observed to decrease after surgery and this decrease was reported to occur in one horse because of neurogenic atrophy of muscle fibers within the SL. The aim of this study was to prove the hypothesis that neurectomy of the DBLPN causes neurogenic atrophy of the muscular portion of the PSL and to show that muscle fibers are replaced with collagen fibers and fat tissue. We compared 10 SL harvested from pelvic limbs of 5 horses that had undergone neurectomy of the DBLPN of the pelvic limbs (i.e., treated SLs) with 10 SLs harvested from 5 horses that had not undergone neurectomy of the DBLPN (i.e., control SLs). Before the ligaments were harvested they were examined ultrasonographically with the horse standing after the horses with euthanized. After the ligaments were harvested, they were measured with a Vernier caliper and histologically evaluated using Masson's trichrome stain. Significant histological abnormalities were observed in the neurectomized ligaments including atrophy of muscle fibers and increased deposition of collagen and fat tissue. The neurectomized ligaments were smaller as determined by using a caliper than the non-neurectomized ligaments. This investigation demonstrates that neurectomy of the DBLPN induces neurogenic atrophy of the muscular portion of the PSL changing the morphology of the ligament. Rapid atrophy of muscle after denervation explains the postoperative reduction in size of the proximal aspect of the SL.

Biography

Jose Antonio Guerra Palos has completed his Masters from School of Veterinary Medicine at UNAM University in Mexico City, Mexico. He is a Professor at UAEM and UNAM Veterinary School and has a company of equine ambulances and mobile practice with horses in Mexico City and loves horseback riding.

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